

**Research Article**

# **THE IMPACT OF STRESS ON SLEEP PATTERN AND ACADEMIC PERFORMANCE AMONG NURSING STUDENTS IN JORDAN: A CROSS SECTIONAL STUDY**

*Faris Alsarairah<sup>\*#</sup>, Haytham Al-Oran<sup>\*\*</sup>, Wesam Al-Magharbeh<sup>\*\*\*</sup>*

<sup>\*</sup>Department of Community and Mental Health Nursing, Mutah University, Mutah, Jordan

<sup>\*\*</sup>Department of Maternal and Child Health Nursing, Mutah University, Mutah, Jordan

<sup>\*\*\*</sup>Department of Allied Medical Sciences, Al-Balqa Applied University, As-Salt, Jordan

## **Abstract**

Good and healthy sleep is essential to the health of the body and mind as well as the memory, well-being, and learning of nursing students. It has been found that stress and sleep are linked as a result of the academic responsibilities of students the level of stress increases and thus affects the quality of sleep. Nursing students are exposed to sleep disorders that affect their academic performance. The effect of stress on sleep quality and academic performance has not been more comprehensively studied in the literature. The main aim of the current study was to determine the impact of stress on the sleep pattern and academic performance of nursing students, in addition to identifying the relationship between them. The current cross-sectional study targeted 320 students from the Faculty of Nursing at Mutah University. Questionnaires were distributed as research tools, which consisted of four parts: A questionnaire related to demographic characteristics and lifestyle, determination of stress levels by Kessler Psychological Distress Scale (K10), sleep quality assessment by Pittsburgh Sleep Quality Index (PSQI), academic performance is assessed through questions about the overall Grade Point Average (GPA) and all participants were asked to complete their questionnaires accurately. The relationship between study variables was examined using the Pearson Chi-Square test, which is also used to analyze associations between categorical variables. While the test result at  $p < 0.05$  is considered statistically significant. The overall PSQI score was obtained for 76% of the participants with a mean of  $(8.42 \pm 3.63)$ , most of the participants 81% reported that their sleep quality was poor and 63% of them reported positive distress on the Kessler Distress Scale (K10) with a mean of  $(23.92 \pm 8.72)$ . 82% of female and 56% of male participants reported stress, there was a statistically significant relationship between stress and gender ( $p=0.001$ ), between daytime naps and poor sleep quality ( $p=0.036$ ), between stress and academic performance (GPA

( $p=0.025$ )), and between stress and sleep pattern (poor sleep quality) ( $p=0.002$ ). The results showed the prevalence of stress and poor sleep quality among nursing students was high. In addition, the academic performance showed a statistically significant relationship with stress levels or sleep quality. It was verified through the results that stress and sleep impact each other for nursing students and affect their academic performance. *ASEAN Journal of Psychiatry, Vol. 24(3) March, 2023; 1-19.*

**Keywords: Stress, Sleep Pattern, Academic Performance, Nursing Students**

## **Introduction**

Stress is defined as a psychological and physical stimulus that disturbs the state of adaptation and negatively affects the dynamic interaction and adaptation between the individual and his response to the environment such as the learning environment around him [1]. Stress is considered one of the most important factors that affect the academic achievement of university students in general and nursing students in particular, where nursing students suffer from pressure and stress that leads to burnout [2,3]. This is because the study of nursing specialization requires theoretical and practical training for students and good education to be able to carry out the tasks of the nursing profession in the future and provide effective health care at a good level, and for this reason, nursing students suffer from a high level of stress and severe pressures [4-6]. Moreover, stress is considered one of the global problems that nursing students suffer from in various countries of the world [4]. In addition, it was found that the psychological pressure of nursing students affects their physical and mental health, which affects their professionalization process [4-6].

Sleep is defined as a basic physiological therapeutic phenomenon that results from the

interaction between biological and biochemical processes with the social, environmental, and cultural aspects closely related to the lives of young people [7,8]. The duration of sleep is defined as the amount of sleep that the individual gets during the night period or within 24 hours, Also, sleep quality is defined as the individual's satisfactory expression of aspects of sleep onset, sleep experience, sleep quantity, refreshment upon awakening, and sleep maintenance [9,10]. Sleep is very important for maintaining the physical and mental health of university students because it helps give the body an opportunity to feel comfortable and plays an important role in the process of academic achievement and learning [11]. In addition, lack of sleep, deprivation of it, or lack of hours of sleep results in many negative effects and problems that university students and nursing students may face, among these effects are anxiety, fatigue, lack of concentration, decreased neurocognitive performance, daytime sleepiness, disturbed mood, high tension, difficulty paying attention, and inability to complete tasks [12-15]. Nursing students may suffer from a lack of sleep due to stress, as it is considered a major factor contributing to their lack of sleep, where many studies from different countries of the world have proven that stress leads to a lack of sleep

and affects its quality and duration among students of medical colleges [16-21].

Many studies have shown that there is a clear impact of stress on sleep among medical students such as nursing [10,12,22,23], as students suffer from insomnia and lack of sleep, which affect the quality of sleep, this is because of the stress resulting from staying up late to get extra time to study in order to perform the exams well or to complete the tasks that determine their level in the study, in order to prepare for the future and compete for the best ranks [11,19].

All of these factors lead to stress, which in turn affects the quality and pattern of sleep for students. In addition to that, the quality of sleep is measured by the Pittsburgh Sleep Quality Index (PSQI) [12]. Furthermore, there is a relationship and correlation between stress, sleep, and academic performance, when medical students suffer from high-stress levels, this negatively affects their mental and physical health, their level of focus, and their cognitive and academic performance.

While the effect of stress on sleep among students appears through disturbed sleep, lack of hours of sleep, waking up during sleep, and waking up early [12], which may also lead to weakness in the academic performance of students. In addition, it was found that sleep has a direct effect on perception, attention, and working memory among students, as working memory is responsible for the learning process and is an indicator of the quality of academic performance [24,25]. This memory is affected by sleep disturbance, which is also affected by a high level of stress in students [26].

Also, it was found that the disorder resulting

from stress is widespread among students of medical colleges, which leads to an effect on the quantity and quality of sleep and thus contributes to poor quality of well-being and learning among students [16], and some studies also mentioned that high levels of stress among students are associated with a decrease in their academic performance [12,27-29].

There are some studies conducted in some Arab and foreign countries that dealt with the relationship between stress, quality of sleep, and academic performance of medical and nursing students [ 6,7,10-12,19], but there is not one study, at least has addressed this important topic in Jordan, where stress and lack of sleep are common problems among university students, especially nursing students, because they face more difficulties during the study, such as intensive curricula, increased academic requirements, difficult exams and their diversity and repetition, the need to adhere to appointments and timetables, and others.

On the other hand, the high levels of stress, the prevalence of sleep disorders, and the poor academic performance of nursing students represent a threat at the academic level and a concern at the health level. Therefore, the aim of conducting the current study was to evaluate and determine the impact of stress on sleep pattern and academic performance among nursing students during their studies in the pre-clinical stages at the Faculty of Nursing, Mutah University.

In addition to that, to investigate the relationship between stress, sleep pattern, and academic performance.

## **Materials and Methods**

### *Study setting and design*

This cross-sectional study adopted the descriptive analytical design and approach, it was conducted from August to October 2022 and targeted nursing students who were selected from different educational levels (first, second, third, and fourth) at the Faculty of Nursing at Mutah University, Jordan. The design of the cross-sectional study was adopted because it is appropriate to achieve the main purpose of the study, as well as its ability to respond to the desired sub-goals of the study in a manner that is appropriate to the time, capabilities, and sources of information. Data were collected and information was obtained through distributing questionnaires as research tools, which consisted of four parts: A questionnaire related to demographic characteristics and lifestyle, determination of stress levels by Kessler Psychological Distress Scale (K10), sleep quality assessment by Pittsburgh Sleep Quality Index (PQSI), and academic performance is assessed by the overall Grade Point Average (GPA).

The Kessler scale (K10) was used to determine the level of prevalence of stress among the participating nursing students. This scale consists of 10 questions that included an evaluation of stress and anxiety during the past three months. The items were evaluated on a five-point scale with scores in the range (10-50), So the symptoms of anxiety and stress are considered mild distress if their scores are in the range (20-24), moderate (25-30) scores, and severe (30 or higher) scores. Also, the Kessler scale is an effective and universally popular tool for

studying and evaluating stress when conducting population studies [30].

The quality of sleep among the participating students was identified and evaluated by the PSQI [31], which consists of 18 questions that include seven components. Briefly, four questions were determined about sleep time, waking time, sleep latency time, and total hours of actual sleep during the past three months to measure sleep quality. In addition to the rest of the questions which included obtaining information about suggested factors that may lead to sleep disturbance such as daytime sleepiness and use of sleep medications, enthusiasm for productivity, and a final self-assessment question about the overall quality of sleep in three past months. Each question was classified and given from 0 to 3 points, and the maximum points for each component were 3 out of 3, while the total score range for the seven components that make up the total points was in the range (0-21). In addition to that, higher scores indicate poor sleep quality, for example, a score higher than 6 indicates poor sleep quality.

The academic performance of the participating nursing students was measured and evaluated using the current overall Grade Point Average (GPA). This measure was used to study and determine the academic achievement of students in many studies similar to this study. Moreover, the GPA scale is based on the student's cumulative average, which is obtained from the academic record, where the students' average grades for the first semester were adopted, and therefore the cumulative average was classified into three categories according to grades out of 5 were: 4.5-5 (excellent performance), 3.5-4.5

(very good performance), and  $<3.5$  (good performance, pass) or (poor performance (fail)).

#### *Participants and procedure*

The study did not include certain inclusion criteria, i.e., all students in the nursing department are suitable for participation, except the students who are absent from attendance on the day on which the data was collected, or students who were not willing to participate in this study as out of 335 students, refused 15 students participated in the study procedures. The number of participating students was 320 from the Faculty of Nursing at Mutah University, and their ages ranged between 18 to 25 years, females represented 64% (n=204) of the total number of participating students, while males represented 36% (n=116). Data about the sociodemographic and lifestyle characteristics of the participating nursing students were collected and they included (gender, age, marital status, work status, residency, academic year, number of times intake of caffeine, and napping during the day). Moreover, all students reported their consent to participate and thus had a response rate of 100% and completed the questionnaire based on their availability during class. In addition, the person responsible for following up and distributing the questionnaires was one of the members of the research team, who clarifies the questionnaires, highlights the purpose of the study, and answers students' inquiries about the items and paragraphs of the questionnaire.

The data were examined, and statistical analysis was performed and entered into the statistical program using the Statistical Package for Social Sciences (SPSS) version 22. The data were

analyzed by descriptive statistics, which are presented as categorical variables in the form of frequencies and percentages, while continuous variables are presented by the mean and standard deviation. The relationship between demographic variables, stress, sleep quality, and academic performance was examined using Pearson's Chi-square test, which is also used to analyze associations between categorical variables. Whereas the test result at  $p < 0.05$  was considered statistical significant.

## **Results**

### *Sociodemographic characteristics of the study participants*

The total of nursing students who participated in this study was 320, and their socio-demographic characteristics are shown in Table 1. The majority of the participants were females (n=204, 64%), while 116 were males (36%). The majority of the participants (n=196, 61%) were between the ages of 20 and 24 years. Regarding the marital status of students, most of them (n =314, 98%) are unmarried, did not work (n=256, 80%), and live with their families (n=308, 96%). Regarding the academic year, about one-third of the participating students were (n=112, 35%) in the first academic year, (n=80, 25%) in the second year, (n=83, 26%) in the third year, and (n=45, 14%) in the fourth year. In terms of practicing dietary habits, the focus was placed on the number of times caffeine was consumed, where more than half of the participants (n=199, 62%) reported that they drink caffeine daily, (n=87, 27%) drink it weekly, and (n=34, 11%) more than once in the week.

In terms of the academic performance of the participating students that was measured by relying on their Grade Point Average (GPA), they were classified according to their academic performance into three categories, 32% of the participating students were excellent with a GPA of (4.5-5.0), 33% of them were very good with a GPA of (3.5-4), while 35% were good or below in their academic performance (<3.5). The sleeping habits of the participating nursing students were identified and examined using the PSQI global score as shown in Table 1. It is noted that there is a poor quality of sleep among the participants if the total score obtained for the PSQI is more than 5. In this study, the total score for the PSQI was obtained for the participants 76% (n=244) with a mean value of (8.42 ± 3.63). Table 1 also shows that more than half of the students (n=170, 53%) went to bed during the period (1:00-1:59), then comes the period from 00:00 to 00:59 and the participants were (n=74, 23%), while 21% reported that they went to sleep before midnight, and it is considered the normal bedtime.

Therefore, the hours of sleep that the students took were less than seven hours per night, with a mean of 5.8 ± 1.58 hours out of the actual total hours of sleep, which ranged from 2 to 11 hours. In addition, 45% of the participating nursing students reported that they took a break by taking a nap during the day. It should be noted that most of the participants (n=260, 81%) reported that their sleep quality was poor, while only 19% reported that their sleep quality was as fairly good.

The prevalence of stress among the participating nursing students was prevalent as 63% (n=203)

showed distress positively on Kessler Psychological Distress Scale (K10). Of the participating students, 40% (n=129) experienced moderate or severe symptoms of stress, while 23% and 15% experienced mild and moderate levels of stress, respectively. The mean K10 for the participating nursing student was 23.92 ± 8.72 and K10 scores included all ranges from 10 to 50.

*The impact of stress on sleep pattern and Academic Performance (GPA) of nursing students.*

Table 2 shows the relationship between stress and sleep pattern (poor sleep quality) and GPA, through study variables that also include the characteristics of participating nursing students. Where the majority of the participants reported that they suffer from stress, 82% of the females and 56% of the males. Therefore, there was a statistically significant relationship between stress and gender (p=0.001), as females suffer from stress more than males. The results showed that nursing students who take a nap during the day suffer from poor sleep quality, as 82% of the participants reported suffering from poor quality of their sleep even though they took a daytime nap, compared to 72% who did not take a nap. More clearly, there was a statistically significant association between daytime naps and poor sleep quality (p=0.036). In addition, statistically significant differences were found between stress and the GPA of the participating nursing students, as well as between GPA and poor sleep quality. According to the analysis, the most stressed 68% of participants had a GPA < 3.5, while the least stressed 57% of participants had GPA of 4.5-5. This means that there is a

statistically significant correlation between stress and GPA ( $p=0.025$ ). Regarding the relationship between GPA and poor sleep quality, it was found that 82% of the participants with poor sleep quality had a  $GPA < 3.5$  and 69% of the participants with poor sleep quality had GPA of 4.5-5. Thus there was a statistically significant correlation between poor sleep quality and GPA ( $p=0.034$ ). Moreover, 70% of the participating students reported that they suffer from poor sleep quality due to stress, compared to 47% of the

participants who did not have poor sleep quality. It was found that there is a clear statistically significant relationship between stress and sleep pattern (poor sleep quality) ( $p=0.002$ ). In addition, the results show that students with a higher level of stress suffer from poor sleep quality, as poor sleep quality was represented with each level of distress as follows: 70% of mild distress, 90% of moderate distress, and 96% of severe distress ( $p=0.002$ ) (Table 2).

**Table 1:** Sociodemographic characteristics of the study participants (nursing students) (n=320).

Variable	Categorization	Total Number of responded (N=320)	
		Frequency (n)	Percentage (n,%)
Gender	Male	116	36%
	Female	204	64%
Age (years)	18-20	117	37%
	20-24	196	61%
	Above 24	7	2%
Marital status	Single	314	98%
	Married	6	2%
Academic year	1 <sup>st</sup>	112	35%
	2 <sup>nd</sup>	80	25%
	3 <sup>rd</sup>	83	26%
	4 <sup>th</sup>	45	14%
Residence place	With family	308	96%
	Away from family	12	4%
Caffeine intake	Daily	199	62%
	weekly	87	27%
	more than once a week	34	11%
Working condition	Working	64	20%
	Not working	256	80%
Taking a nap during the day	Yes	144	45%
	No	176	55%

Academic scores (GPA)	4.5-5	103	32%
	3.5-4.	106	33%
	<3.5	111	35%
Quality of sleep (poor)	Yes	260	81%
	No	60	19%
Time of going to bed	Before 23:00	10	3%
	00:00-23:59	58	18%
	0000-00:59	74	23%
	1:59-1:00	170	53%
	2:00 or later	8	3%
Time to get up	Before 5:00	39	12%
	5:59-5:00	51	16%
	6:59-6:00	106	33%
	7:59-7:00	79	25%
	After 8:00	45	14%
Stress	Well	117	37%
	Mild	74	23%
	Moderate	48	15%
	Severe	81	25%

**Table 2:** Represents the association between stress and the characteristics of the nursing students by sleep pattern and academic performance (n=320).

Study Variables	Categorization	Stress		P-Value	Poor sleep quality		P-Value
		Yes (n, %)	No (n,%)		Yes (n,%)	No (n,%)	
Gender	Male	(65,56)	(51,44)	0.001	(90,78)	(26,22)	0.897
	Female	(168,82)	(36,18)		(156,77)	(48,23)	
Academic year	1 <sup>st</sup>	(76,68)	(36,32)	0.506	(87,78)	(25,22)	0.782
	2 <sup>nd</sup>	(48,60)	(32,40)		(59,74)	(21,26)	
	3 <sup>rd</sup>	(53,64)	(30,36)		(65,78)	(18,22)	
	4 <sup>th</sup>	(28,62)	(17,38)		(34,76)	(11,24)	
Caffeine intake	Daily	(130,65)	(69,35)	0.756	(162,81)	(37,19)	0.209
	weekly	(53,61)	(34,39)		(63,72)	(24,28)	



	more than once a week	(23,68)	(11,32)		(24,71)	(10,29)	
Working condition	Working	(43,67)	(21,33)	0.752	(56,88)	(8,12)	0.078
	Not working	(164,64)	(92,36)		(192,75)	(64,25)	
Taking a nap during the day	Yes	(93,65)	(51,35)	1.005	(118,82)	(26,18)	0.036
	No	(115,65)	(61,35)		(127,72)	(49,28)	
Academic scores (GPA)	4.5-5	(59,57)	(44,43)	0.025	(71,69)	(32,31)	0.031
	3.5-4.	(71,67)	(35,33)		(75,71)	(31,29)	
	<3.5	(75,68)	(36,32)		(91,82)	(20,18)	
Quality of sleep (poor)	Yes	(182,70)	(78,30)	0.002			
	No	(28,47)	(32,53)				
Stress	Well				(79,68)	(38,32)	0.002
	Mild				(52,70)	(22,30)	
	Moderate				(43,90)	(5,10)	
	Severe				(78,96)	(3,4)	

## Discussion

The results of the current study showed that the prevalence of stress among nursing students was high (63%) and the prevalence of poor sleep quality was high (81%). This result is consistent with the results of some studies, especially in Arab countries, where they found that the prevalence of stress and poor sleep quality among nursing students was high [12,19,21,28, 32,33]. The reason for the prevalence of stress and poor quality of sleep may be related to environmental factors surrounding nursing students in Jordanian universities and irregular sleep habits such as studying late at night, caffeine intake, long hours internet use, and increased numerous academic tasks. As sleep is considered a good indicator of the health status

of students, but when they join the university, this leads to a change that clearly affects their sleeping habits, and thus increases the level of stress among students [7,34,35].

One of the most important results reached in this study is finding a significant association between gender and stress, as 82% of nursing students were females suffering from stress as well as from a change in sleep pattern. This result is consistent with some studies where it was mentioned that being a female university student studying in some medical departments, is considered a clear and important indicator of disturbed sleep pattern and, consequently, a high level of stress [19,36-38]. This means that there are differences between the sexes related to stress level as well as sleep pattern. In addition,

the results showed that taking a nap during the day was significantly associated with a change in the sleeping pattern at night for nursing students, as 82% of them had a disturbance in their sleep pattern and they took a nap during the day. This result is consistent with the results of studies conducted in Saudi Arabia [12], America [35], and Alabama [39]. Moreover, it was found that naps during the day affect the sleep pattern of nursing students, because naps lead to irregular hours of sleep and do not compensate for the hours of night sleep, thus greatly affecting the quality of sleep among students.

In general, university students have responsibilities and demands related to the psychological and social aspects that make them vulnerable to a high level of stress, which may affect academic performance [40]. Specifically, nursing education is stressful and leads to more stress because it needs psychological and material capabilities, due to the clinical requirements, high academic tasks, and the multiple and complex challenges faced by nursing students in the clinical environment [41,42]. Based on this, an important and basic conclusion was reached in this study, which is that stress among nursing students affects academic performance. Where the results showed that 68% of the students who were suffering from a high level of stress had the lowest GPA (<3.5), and in contrast, the students with a high GPA had a low level of stress. This result is similar to the results of some national studies as well as studies at the international level as two studies conducted in Saudi Arabia [19,40,43,44], a study in Singapore [45], and another in Turkey [6].

Through the results related to the effect of sleep quality on the academic performance of nursing students, our study proved that there is a correlation between poor sleep quality and academic performance. Different sleeping habits affected academic performance, as 82% of students who suffer from poor sleep quality due to practicing bad sleeping habits had GPA of less than 3.5, meaning that their academic performance results are weak and not good. This result is similar to what some studies concluded [7,39,46-49]. Certainly, stress and sleep affect each other, as lack of sleep can lead to increased stress among students, in return, increasing the level of stress also leads to a change in sleep pattern and disturbances in it, and thus leads to the poor academic performance of nursing students. This is for several reasons, namely the preference for studying at night, which leads to irregular sleep and waking up, the use of technology before bedtime, the lack of a suitable environment for sleep and study, and a large number of tasks and academic activities.

According to the results obtained, the association between stress and sleep pattern (poor sleep quality) was shown, as 70% of the nursing students had poor sleep quality due to stress and the students with a higher level of stress had poor sleep pattern. This finding was similar to some previous studies that reported an association between poor sleep quality and stress [19,28,29]. The reason for the high level of stress among nursing students may be the social and academic factors that greatly affect their sleep pattern. On the other hand, some studies have shown that stress and sleep are linked from the physiological side, as they are closely and pivotally linked to the pituitary gland [29,50-53].

## **Conclusion**

The current study concluded that the prevalence of stress and poor sleep quality among nursing students was high. Stress and poor sleep quality were more prevalent among females than males. Also, taking a nap during the day was an influencing factor and a cause for changing the sleep pattern at night among nursing students. One of the most important findings of the study is that academic performance showed a statistically significant correlation with stress levels or sleep quality. In addition, it has been confirmed that stress and sleep affect each other for nursing students on the one hand, and affect their academic performance on the other hand. We recommend that in this study, medical teachers, researchers, and officials in academic institutions pay attention to assessing and improving student's well-being by facilitating difficulties, creating regular study schedules, and developing teaching methods in order to reduce the level of stress and improve sleep quality, thus raising the level of academic performance for students, especially students in medical departments. Furthermore, researchers should conduct more comprehensive future studies aimed at improving the quality of sleep among students in different disciplines, raising the level of their academic performance, and identifying the factors that affect it and addressing them.

## **Limitations**

The current study included some limitations, among these limitations is that the study included one educational institution and one department, and therefore the environment is specific and it is difficult to generalize the results

and which affects their accuracy, as well as the fact that the study relied on the cross-sectional design that does not provide the establishment of an accurate causal relationship between the study variables such as stress and sleep pattern and academic performance. In addition, the results depend on the student's answers to the survey questions and there may be a bias in the reliability of the answers therefore the results can have a kind of bias if the students do not answer clearly and truthfully. One of the most important limitations is the difficulty in determining the effect of stress and poor sleep quality on the academic performance of nursing students because our perception of academic performance is not easy due to the intervention of various factors in determining its level among students, which include habits and attitudes, family environment, methodologies, and the educational system, as well on the social, economic and psychological status of students. Finally, the current study was applied to a limited group of nursing students, so future studies should be conducted that include a larger number of students from different medical departments and universities in Jordan to verify the validity of the results.

## **References**

1. Gomathi S, Jasmindebora S, Baba V. Impact of stress on nursing students. *International Journal of Innovative Research and Advanced Studies*. 2017;4(4):107-10.
2. Sharififard F, Asayesh H, Hosseini MH, Sepahvandi M. Motivation, self-efficacy, stress, and academic performance correlation with academic burnout among nursing

- students. *Journal of Nursing and Midwifery Sciences*. 2020;7(2):88.
3. Hicks C. Utilization of a focus group to evaluate the perceived stress levels and coping mechanisms of student registered nurse anesthetists. The University of Southern Mississippi; 2015.
  4. Agacdiken S, Boga NM, Ozdelikara A. Determination of nursing students' stress level toward nursing education. *Journal of Samsun Health Sciences*. 2016;1:1-9.
  5. Karaca A, Yıldırım N, Ankaralı H, Açıkgöz F, Akkuş D. Adaptation to Turkish of nursing education stress scale. *Journal of Research Development in Nursing*. 2014;16:29-40
  6. Karabulut N, Gurcayir D, Yildiz BZ. Effect of stress on academic motivation and achievement of students in nursing education. *International Journal of Caring Sciences*. 2021;14(1):15.
  7. Gallego-Gómez JI, González-Moro MT, González-Moro JM, Vera-Catalán T, Balanza S, et al. Relationship between sleep habits and academic performance in university Nursing students. *BMC Nursing*. 2021;20(1):1-8.
  8. Matricciani L, Bin YS, Lallukka T, Kronholm E, Wake M, et al. Rethinking the sleep-health link. *Sleep Health*. 2018;4(4):339-348.
  9. Kline C. Sleep quality. *Encyclopedia of Behavioral Medicine*. 2013:1811-1813.
  10. Mehta KJ. Effect of sleep and mood on academic performance-at interface of physiology, psychology, and education. *Humanities and Social Sciences Communications*. 2022;9(1):1-3.
  11. Aung K, Nurumal M, Zainal S. Sleep quality and academic performance of nursing students. *Journal of Nursing and Health Science*. 2016;5(6):145-149.
  12. Alotaibi AD, Alosaimi FM, Alajlan AA, Abdulrahman KA. The relationship between sleep quality, stress, and academic performance among medical students. *Journal of Family & Community Medicine*. 2020;27(1):23.
  13. AlDabal L, BaHamam AS. Metabolic, endocrine, and immune consequences of sleep deprivation. *The Open Respiratory Medicine Journal*. 2011;5:31.
  14. Elagra MI, Rayyan MR, Alnemer OA, Alshehri MS, Alsaffar NS, et al. Sleep quality among dental students and its association with academic performance. *Journal of International Society of Preventive & Community Dentistry*. 2016;6(4):296.
  15. Choueiry N, Salamoun T, Jabbour H, El Osta N, Hajj A, et al. Insomnia and relationship with anxiety in university students: A cross-sectional designed study. *PloS one*. 2016;11(2):e0149643.
  16. Pascoe MC, Hetrick SE, Parker AG. The impact of stress on students in secondary school and higher education. *International Journal of Adolescence and Youth*. 2020;25(1):104-112.
  17. Lee SY, Wuertz C, Rogers R, Chen YP. Stress and sleep disturbances in female college students. *American Journal of Health Behavior*. 2013;37(6):851-858.
  18. Wallace DD, Boynton MH, Lytle LA. Multilevel analysis exploring the links between stress, depression, and sleep

- problems among two-year college students. *Journal of American College Health*. 2017;65(3):187-96.
19. Almojali AI, Almalki SA, Alothman AS, Masuadi EM, Alaqeel MK. The prevalence and association of stress with sleep quality among medical students. *Journal of Epidemiology and Global Health*. 2017;7(3):169-174.
20. Amaral AP, Soares MJ, Pinto AM, Pereira AT, Madeira N, Bos SC, Marques M, Roque C, Macedo A. Sleep difficulties in college students: The role of stress, affect and cognitive processes. *Psychiatry Research*. 2018;260:331-337.
21. Waqas A, Khan S, Sharif W, Khalid U, Ali A. Association of academic stress with sleeping difficulties in medical students of a Pakistani medical school: A cross sectional survey. *PeerJ*. 2015 ;3:e840.
22. Åkerstedt T, Orsini N, Petersen H, Axelsson J, Lekander M, Kecklund G. Predicting sleep quality from stress and prior sleep—a study of day-to-day covariation across six weeks. *Sleep medicine*. 2012;13(6):674-679.
23. Simonelli-Muñoz AJ, Balanza S, Rivera-Caravaca JM, Vera-Catalán T, Lorente AM, et al. Reliability and validity of the student stress inventory-stress manifestations questionnaire and its association with personal and academic factors in university students. *Nurse Education Today*. 2018;64:156-160.
24. Almarzouki AF, Mandili RL, Salloom J, Kamal LK, Alharthi O, et al. The Impact of Sleep and Mental Health on Working Memory and Academic Performance: A Longitudinal Study. *Brain Sciences*. 2022;12(11):1525.
25. Siquara GM, dos Santos Lima C, Abreu N. Working memory and intelligence quotient: Which best predicts on school achievement?. *Psico*. 2018;49(4):365-374.
26. Peng Z, Dai C, Ba Y, Zhang L, Shao Y, Tian J. Effect of sleep deprivation on the working memory-related N2-P3 components of the event-related potential waveform. *Frontiers in Neuroscience*. 2020;14:469.
27. Sohail N. Stress and academic performance among medical students. *Journal of the College of Physicians and Surgeons*. 2013;23(1):67-71.
28. Herawati K, Gayatri D. The correlation between sleep quality and levels of stress among students in Universitas Indonesia. *Enfermeria Clinica*. 2019;29:357-361.
29. Gandhi K, Godaria Y, Revadi G. Evaluation of sleep pattern due to stress in undergraduate medical students and its impact on health and academic performance: A cross-sectional study from tertiary health center of Central India. *medRxiv*. 2021:2021-2029.
30. Kessler RC, Andrews G, Colpe LJ, Hiripi E, Mroczek DK, et al. Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine*. 2002;32(6):959-976.
31. Buysse DJ, Reynolds III CF, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index: A new instrument for psychiatric practice and research. *Psychiatry Research*. 1989;28(2):193-213.

32. Siddiqui AF, Al-Musa H, Al-Amri H, Al-Qahtani A, Al-Shahrani M, et al. Sleep patterns and predictors of poor sleep quality among medical students in King Khalid University, Saudi Arabia. *The Malaysian Journal of Medical Sciences: MJMS*. 2016;23(6):94.
33. Lin SH, Huang YC. Life stress and academic burnout. *Active Learning in Higher Education*. 2014;15(1):77-90.
34. Núñez P, Perillan C, Arguelles J, Diaz E. Comparison of sleep and chronotype between senior and undergraduate university students. *Chronobiology International*. 2019;36(12):1626-1637.
35. Phillips AJ, Clerx WM, O'Brien CS, Sano A, Barger LK, et al. Irregular sleep/wake patterns are associated with poorer academic performance and delayed circadian and sleep/wake timing. *Scientific Reports*. 2017;7(1):3216.
36. Abdulghani HM, AlKanhah AA, Mahmoud ES, Ponnampereuma GG, Alfaris EA. Stress and its effects on medical students: a cross-sectional study at a college of medicine in Saudi Arabia. *Journal of Health, Population, and Nutrition*. 2011;29(5):516.
37. Abdulghani HM, Alrowais NA, Bin-Saad NS, Al-Subaie NM, Haji AM, et al. Sleep disorder among medical students: relationship to their academic performance. *Medical Teacher*. 2012;34(sup1):S37-S41.
38. Shah M, Hasan S, Malik S, Sreeramareddy CT. Perceived stress, sources and severity of stress among medical undergraduates in a Pakistani medical school. *BMC Medical Education*. 2010;10:1-8.
39. Zeek ML, Savoie MJ, Song M, Kennemur LM, Qian J, et al. Sleep duration and academic performance among student pharmacists. *American Journal of Pharmaceutical Education*. 2015;79(5).
40. Shehadeh J, Hamdan-Mansour AM, Halasa SN, Hani MH, Nabolsi MM, et al. Academic stress and self-efficacy as predictors of academic satisfaction among nursing students. *The Open Nursing Journal*. 2020;14(1).
41. Shehadeh JH, Hamdan-Mansour AM. Prevalence and association of premenstrual syndrome and premenstrual dysphoric disorder with academic performance among female university students. *Perspect Psychiatry Care*. 2018;54(2):176-184.
42. Hamaideh SH, Hamdan-Mansour AM. Psychological, cognitive, and personal variables that predict college academic achievement among health sciences students. *Nurse Education Today*. 2014;34(5):703-708.
43. Alqudah M, Balousha SA, Al-Shboul O, Al-Dwairi A, Alfaqih MA, et al. Insomnia among medical and paramedical students in Jordan: impact on academic performance. *BioMed Research International*. 2019.
44. Al-Zahrani JM, Aldossari KK, Abdulmajeed I, Al-Ghamdi SH, Al-Shamrani AM, et al. Daytime sleepiness and academic performance among medical students. *Health Science Journal*. 2016;10(3):1.
45. Yun CT, Greenwood KM. Stress, Sleep and Performance in International and Domestic University Students. *Journal of International Students*. 2022;12:81-100.

46. Alsofyani MA, Almalki AA, Alqarni AB, Alzahrani NJ. The interaction between sleep quality and academic performance among the medical students in Taif university. *The Egyptian Journal of Hospital Medicine*. 2018;70(12):2202-2208.
47. Jalali R, Khazaei H, Paveh BK, Hayrani Z, Menati L. The effect of sleep quality on students' academic achievement. *Advances in Medical Education and Practice*. 2020:497-502.
48. Hangouche AJ, Jniene A, Abouddrar S, Errguig L, Rkain H, et al. Relationship between poor quality sleep, excessive daytime sleepiness and low academic performance in medical students. *Advances in Medical Education and Practice*. 2018:631-638.
49. Menon B, Karishma HP, Mamatha IV. Sleep quality and health complaints among nursing students. *Annals of Indian Academy of Neurology*. 2015;18(3):363.
50. Kashani M, Eliasson A, Vernalis M. Perceived stress correlates with disturbed sleep: a link connecting stress and cardiovascular disease. *Stress*. 2012;15(1):45-51.
51. Steiger A, Dresler M, Kluge M, Schüssler P. Pathology of sleep, hormones and depression. *Pharmacopsychiatry*. 2013;46:S30-S35.

*Corresponding author: Faris Alsaireh, Department of Community and Mental Health Nursing, Mutah University, Mutah, Jordan*

**Email:** nadzirahruslan@yahoo.com

**Received:** 07 February 2023, Manuscript No. AJOPY-22-88648; **Editor assigned:** 09 February 2023, PreQC No. AJOPY-22-88648 (PQ); **Reviewed:** 23 February 2023, QC No AJOPY-22-88648; **Revised:** 03 March 2023, Manuscript No. AJOPY-22-88648 (R); **Published:** 10 March 2023, DOI: 10.54615/2231-7805.47303.